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Comments Regarding Universal Service CC: Docket No. 96-45
Good Samaritan Health Systems for the Mid-Nebraska Telemedicine Network
Kearney, Nebraska 68847

Contact: Donna Hammack
Good Samaritan Hospital Foundation
Box 1810
Kearney, NE 68848-1810

Questions to Address:

1. Name of project: Mid-Nebraska Telemedicine Network

2. Please list each of the project's sites:

Name of Site:	State in which it is located:
Broken Bow	Nebraska
Callaway	Nebraska
Cambridge	Nebraska
Cozad	Nebraska
Sargent	Nebraska
Norton	Kansas
Phillipsburg	Kansas
Kearney	Nebraska
Good Samaritan Hospital	
Richard Young Hospital	

Please answer the following questions for each of your sites. Use additional sheets if necessary. Responses will take into account each of the sites.

3. What is the nearest city of population equal to or greater than 50,000 in your state, and approximately how far are you from its boundary?

City: Lincoln Distance from city boundary: 120-200 miles (same city for each of the sites; distance range varies).
The difference in telecommunications charges between urban and rural is illustrated by two points at the greatest distance possible within the city of Omaha connected by T1 service incur a charge of $633, while two points connected within the Mid-Nebraska Telemedicine Network incur a cost of approximately $2,000.

4. Name of the project's telecommunications service provider: AT&T

5. Level of telecommunications service the project is currently using: (For example, voice grade, 144 Kbs (ISDN), 384 Kbps, T-1 or equivalent)
T-1 = 1.54 Mbps

6. Charges for telecommunications service:

Is there a monthly charge? No ☐ Yes ☒
If yes, how much is the charge? 6 - T-1's = $11,500/month (excluding tax) for the network
3 - BRI's Norton = $370.20/month
3 - BRI's Kearney = $90/month

Is there a usage-based charge? No ☒ Yes ☐
If yes, how much is the charge? No on T-1's, Yes on BRI, .04/minute over 10 hours plus long distance hook-up charge.
Is there a distance component (such as a per-mile fee) of the charge? No ☐ Yes ☒
If yes, how much is the charge: T-1's are based on state tariff which is mileage and cost dependent. BRI's are switched; calls outside the local exchange are subject to long distance charges.

Was there an installation fee? No ☐ Yes ☒
If yes, how much was the charge? Waived with multiyear contract.

Is the charge the regular tariffed rate, or is there a discount from the telecommunications provider? Tariffed ☐ Discount ☒
If there is a discount, how much is it? $4,000-5,000

7. How does the project use telecommunications in the delivery of health care? (For example -- to send x-rays, distribute public health information, or perform video consultations. Please identify any occasional or episodic uses, such as might result from an outbreak of disease.)

The Mid-Nebraska Telemedicine Network has three primary uses, which support the mission statement in no. 8:

1. Video Consultation
2. Educational Programs
3. Administrative Meetings

8. Could the project provide the services it is currently providing with less bandwidth? What effect would a lesser level of bandwidth have? (The implications of using greater or lesser levels of telecommunications services are related to image transmission time. What would be the impact if the health care activities for which you now use telecommunications took twice as long, or if they could be completed in half the time?

The services provided through the Mid-Nebraska Telemedicine Network are consistent with the stated mission: "The mission of the Mid-Nebraska Telemedicine Network is to develop a flexible multi-use system that will improve access to quality care by providing consultation and treatment in both routine and emergency situations

and increase educational opportunities for both providers and the community. The thrust of the network's programmatic development has been clinical during the first year, and presently educational and administrative uses are increasing rapidly.

As of this week, 500 clinical consultations have taken place in twenty-one different specialties. Of these, leading uses have been psychiatry, speech pathology and medical oncology. Patients have indicated that: for mental health consultations the easy-access has improved their compliance in obtaining therapy and the technology became "transparent" in the provision of services; stroke patients have received rehabilitative work they simply would not have had with no speech therapist in their home community; and oncology patients can remain close to home for care and have the benefit of seeing their primary care physician and their specialist at the same time.

The efficacy of the technology is verified by the evaluative information collected during each visit. Ninety-seven percent of the patients seen over Telemedicine were satisfied with the Telemedicine visit and indicated that their ability to explain their problem to the doctor "on tv" compared to a face-to-face visit was either the same or even better (in 19%) of the cases. All patients indicated that their perception of the quality of the medical treatment was either the same or better (23%) than an actual face-to-face encounter. Both remote providers and specialists indicated a high level of satisfaction with Telemedicine visits. All remote provides indicated they would use Telemedicine again, and 99% of the specialists indicated they would continue.

Video can be sent at rates as low as 56 Kbit/sec, but it has definite flaws in color, sharpness and motion, which are all unacceptable for many types of consultations. A significant number of consultations conducted at the Mid-Nebraska Telemedicine Network (using T1 or 1.54 Mbps) are speech therapy: this is an example of a particular application that may be more difficult at a lower bandwidth. Video compressed at lower bandwidth results in synchronization delay between speech and mouth movement. Another example of a potential difficulty in assessing an individual's movement, such as in the diagnosis of a patient with Parkinson's Disease, when watching for more subtle motion is very important. Less bandwidth decreases video (dynamic) resolution and motion handling capabilities. Higher quality communications is directly related to usefulness and variety of functions.

9. What would the implications of having a greater level of bandwidth be?

T1 transmission of 1.54 Mbps is adequate for any of the healthcare applications we presently envision.

Higher bandwidth greater than 1.54 Mbps could virtually eliminate need for compression (codec). In certain situations, such as the transfer of medical images, such as x-rays, which are transmitted using digitized uncompressed images, the time requirement for transmission over a 14.4 kbps modem would be approximately seven hours--too long to receive information in a timely manner. T1 capability provides

acceptable motion quality and the flexibility to send or receive real time interactions and data transfer in a timely manner; the aforementioned x-ray would take only 4 minutes over a T1 line. Also, because some image resolution is lost when images are compressed, image compression has not been approved by the American College of Radiology or other standards setting bodies.

10. Do you have e-mail? No ☒ Yes ☐

11. Do you have Internet access? No ☒ Yes ☐
If yes, do you incur long-distance charges by using it? No ☐ Yes ☐
Please estimate your number of hours of Internet use per month:

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12. If you have access to the Internet, please list any purposes other than e-mail (such as accessing databases such as Lexis/Nexis) for which you use it:

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